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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 27 AUG 2004
WIPO PCT

Applicant's or agent's file reference 25040-0746	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 02/02097	International filing date *(day/month/year)* 07.05.2002	Priority date *(day/month/year)* 07.05.2002
International Patent Classification (IPC) or both national classification and IPC C02F1/02		
Applicant THE COCA-COLA COMPANY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
03.12.2003	26.08.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Beckmann, O Telephone No. +49 89 2399-7052

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB 02/02097

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1, 3-9	as originally filed
2	received on 19.07.2004 with letter of 16.07.2004

Claims, Numbers

1-15	received on 19.07.2004 with letter of 16.07.2004

Drawings, Sheets

1/1	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-13
	No:	Claims	14,15
Inventive step (IS)	Yes:	Claims	-
	No:	Claims	1-15
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	-

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

   D1: WO-A-01/92143
   D2: WO-A-01/19734.

2. The amendments filed with the letter dated 16.07.2004 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendment concerned is the phrase "whereby sufficient pressure is created by the generation of the steam to pass the steam [...]" in claim 14. In the application as originally filed there is no such specification as regards the pressure. In addition, the term "sufficient" would render claim 14 unclear since it introduces a definition by the result to be achieved (Article 6 PCT).

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT. The reasons are as follows:

3.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses an apparatus which comprises a tank (31) connected to a boiler (33) and a micropump (32) in between, controlled by a central processing unit (CPU 10) (D1: page 5, line 26- page 6, line 4; Fig. 1). While the boiler (33) in D1 corresponds to the "reservoir containing a heater" as defined in claim 1, the "housing" of claim 1 can be identified as the tank (31) in D1. Furthermore, D1 also anticipates the "controls" of claim 1 in form of the CPU (10) which would be able to fulfil the functions mentioned for the controls in claim 1.

The applicant's attention is drawn to the fact that claim 1 does not further specify any treatment in the "treatment housing (10) for treating water", thus no additional technical feature is defined apart from a housing. In addition, even holding water in a tank such as the distilled water tank (31) in D1 can be considered as a "treatment" of water.

The subject-matter of claim 1 therefore differs from this known apparatus solely in

that it specifies the housing to have a relief valve for escape of steam.

However, this distinguishing feature of a relief valve is merely a slight constructional change which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved - ie avoiding too high a pressure in a closed vessel - can readily be foreseen. Besides, this feature has already been employed for the same purpose in a similar apparatus, see document D2 (D2: page 10, lines 1-8; page 14, line 21- page 15, line 2; Fig. 1). It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply this feature with corresponding effect to an apparatus according to document D1 when tank (31) in D1 were a closed vessel.

Therefore, the subject-matter of claim 1 does not appear to involve an inventive step (Article 33(3) PCT) in view of D1.

3.2 Alternatively, document D2 can be considered as being the closest prior art. In D2 the "reservoir containing a heater" as defined in claim 1 is anticipated by the cartridge (10) which is connected to a heat exchanger (11), the latter being the "housing" of claim 1 (D2: page 13, lines 5-27; Fig. 1). Also, a control board (37) is present in the apparatus of D2, which control board would be able to fulfil the functions mentioned for the controls in claim 1 (D2: page 15, lines 11-22; Fig. 1). Furthermore, a pressure relief valve is part of the teaching in D2; through the relief valve excess steam can escape from the cartridge (10) (D2: page 10, lines 1-8; page 14, line 21- page 15, line 2; Fig. 1).

The applicant's attention is drawn to the fact that the question whether the heat exchanger (11) of D2 is employed to generate steam or just hot water is irrelevant since this question concerns a process feature whereas claim 1 is directed to an apparatus.

The subject-matter of claim 1 therefore differs from this apparatus known from D2 merely in that it specifies the relief valve to be part of the housing and not part of the reservoir containing the heater, as in D2.

However, a pressure relief valve at the housing is equivalent to a pressure relief valve at the reservoir containing a heater, as disclosed in D2, since the housing and the reservoir are connected to each other. The fact that they are connected to each other allows excess steam to escape from the apparatus as a whole in either

case, thus no different effect is achieved.

Therefore, the subject-matter of claim 1 does not appear to involve an inventive step (Article 33(3) PCT) in view of D2 either.

4. The subject-matter of claims 14 and 15 is not new in the sense of Article 33(2) PCT; therefore, the present application does not meet the criteria of Article 33(1) PCT. The reasons are as follows:

The document D1 already discloses a method which comprises the steps of heating distilled water from a tank (31) in a boiler (35) and passing the steam thus generated through a duct (15) between a solenoid valve (4) and a delivery nozzle in both directions. The steam sanitizes the duct through which, beforehand, beverages such as water were dispensed. Thus, the steam also flows in a reverse direction to the normal beverage/water flow direction (D1: page 5, line 26- page 6, line 4; Fig. 1).

The subject-matter of claims 14 and 15 is therefore not new (Article 33(2) PCT).

5. Dependent claims 2-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step. The features of these claims are either known from D2 (D2: page 10, lines 1-8) or they are slight constructional changes which come within the scope of the customary practice followed by the person skilled in the art and which do not entail any surprising technical effect.

In our international patent application No. PCT/GB 00/03329 we have described and claimed a water treatment apparatus having an inlet for the water to be treated, an outlet for the treated water, a heater within the housing to come into direct contact with the water and a filter between the heater and the outlet, and means to fill the housing with water up to a maximum level which leaves a headspace between the water and the roof of the housing, the entrance to the outlet being below the operating water level.

In most of the previously suggested water treatment apparatus arrangements, it is usual for the purified water to be passed to a reservoir, possibly via a cooler, and the purified water is drawn off from the reservoir as required, e.g. for mixing with a concentrate to form a post-mix drink. The reservoir may conveniently be a flexible container, e.g. a collapsible bag.

It will be appreciated that the water treatment apparatus, regardless of its specific construction, must from time to time be sanitised to ensure that no unwanted contamination, particularly bacterial contamination, can harmfully affect the treated water.

Various means of achieving the desired sanitisation, of varying degrees of complexity and success, have been proposed. It is an object of the present invention to provide an improved means of achieving the desired sanitisation.

Accordingly, the invention provides a water treatment apparatus comprising a treatment housing through which the water is passed, the housing being connected to a reservoir for the treated water from the housing, the reservoir containing a heater to heat the treated water to generate steam, controls to start and stop flow of water to be treated

CLAIMS

1. A water treatment apparatus comprising a treatment housing through which the water is passed, the housing being connected to a reservoir for the treated water from the housing, the reservoir containing a heater to heat the treated water to generate steam, controls to start and stop flow of water to be treated through the housing and to switch on the reservoir heater and to stop the flow of water when sanitisation is required, whereby steam may be passed through the apparatus in the reverse direction to the water, the housing having a relief valve for escape of the steam from the reservoir.

2. A water treatment apparatus according to Claim 1, in which the reservoir is of metal or plastic and can withstand a pressure of at least one bar and a temperature up to 120°C.

3. A water treatment apparatus according to Claim 1 or 2, in which the housing is a disposable cartridge.

4. A water treatment apparatus according to Claim 1, 2 or 3 in which the housing contains a heater to heat the water to be treated and a filter between the heater and an outlet from the housing for the treated water.

5. A water treatment apparatus according to Claim 4, which contains one or more perforated meshes or screens between the heater and the filter.

6. A water treatment apparatus according to any preceding claim, in which the housing has a probe to detect the water level and the apparatus controls are arranged to switch off incoming water when a predetermined maximum water level is reached, the maximum level leaving a headspace in the housing above the water.

7. A water treatment apparatus according to Claim 6, in which the relief valve for the steam from the reservoir is positioned so as to allow escape from the headspace of steam and volatiles from the treated water.

8. A water treatment apparatus according to any preceding claim, which includes a heat exchanger connectable to a source of untreated water between the source and the treatment housing whereby untreated water can be passed through the heat exchanger on its way to the treatment housing, the heat exchanger being also connected to an outlet from the treatment housing whereby heated treated water can be passed through the heat exchanger in heat exchange relationship with the incoming untreated water.

9. A water treatment apparatus according to any preceding claim, in which the reservoir heater has a wattage of from 1500 to 2500 and the reservoir has a capacity of from 20 to 50 litres.

10. A water treatment apparatus according to any one of Claims 1 to 8, in which the reservoir with the heater is a small secondary tank and the apparatus includes a separate larger reservoir downstream of the tank.

11. A water treatment apparatus according to any preceding claim, in which the controls are arranged to switch on the reservoir heater at the same time or shortly after flow of untreated water into the housing is stopped.

12. A water treatment apparatus according to any preceding claim, in which the pressure relief valve is of the spring-loaded or dead weight type.

13. A water treatment apparatus according to any preceding claim, in which the pressure relief valve leads to a condenser tube and then a drain.

14. A method of sanitising water treatment apparatus of the type having a treatment housing for water to be treated and a reservoir for treated water, the method including the steps of stopping water flow through the apparatus, heating treated water in the reservoir to generate steam, and passing the steam through the apparatus in the reverse direction to the water flow.

15. A method according to claim 14, in which the steam is also passed in the direction of water flow from the reservoir to sanitise apparatus downstream of the reservoir.